

**Status of All Claims in the Application:**

1-11 (Previously Canceled)

12. (Previously Amended) A stage assembly that is adapted to move a device, the stage assembly comprising:

a stage that retains the device;

a stage base that directly supports the stage;

a stage mover assembly connected to the stage, the stage mover assembly moving the stage with at least two degrees of freedom and generating reaction forces in at least two degrees of freedom;

a reaction mass assembly coupled to the stage mover assembly, the reaction mass assembly reducing the reaction forces in at least two degrees of freedom that are transferred to the stage base; and

a reaction mover assembly that adjusts the position of the reaction mass assembly relative to the stage base along an X axis, along a Y axis and about a Z axis.

13-19 (Previously Canceled)

20. (Previously Amended) A stage assembly that is adapted to move a device relative to a stage base, the stage assembly comprising:

a stage adapted to retain the device;

a stage mover assembly connected to the stage, the stage mover assembly moving the stage with at least two degrees of freedom and generating reaction forces in at least two degrees of freedom;

a reaction mass assembly including an X reaction component and a Y reaction component that are coupled to the stage mover assembly, the X reaction component moving relative to the Y reaction component along an X axis, the X reaction component and the Y reaction component moving concurrently along a Y axis relative to the stage base, the reaction mass assembly being

adapted to reduce the reaction forces in at least two degrees of freedom that are transferred to the stage base; and

a mass guide assembly that allows the X reaction component to move relative to the Y reaction component along the X axis and inhibits movement of the X reaction component relative to the Y reaction component along the Y axis.

21-22 (Previously Canceled)

23. (Previously Amended) A stage assembly that is adapted to move a device relative to a stage base, the stage assembly comprising:

a stage adapted to retain the device;

a stage mover assembly connected to the stage, the stage mover assembly moving the stage with at least two degrees of freedom and generating reaction forces in at least two degrees of freedom;

a reaction mass assembly including an X reaction component and a Y reaction component that are coupled to the stage mover assembly, the X reaction component including a pair of spaced apart X reaction masses and the Y reaction component including a pair of spaced apart Y reaction masses, the X reaction component moving relative to the Y reaction component along an X axis, the X reaction component and the Y reaction component moving concurrently along a Y axis relative to the stage base, the reaction mass assembly being adapted to reduce the reaction forces in at least two degrees of freedom that are transferred to the stage base; and

a mass guide assembly that connects the X reaction masses to the Y reaction masses, allows the X reaction masses to move independently relative to the Y reaction masses along the X axis and inhibits movement of the X reaction masses relative to the Y reaction masses along the Y axis.

24-27 (Previously Canceled)

28. (Previously Amended) The stage assembly of claim 93 further comprising a mass guide assembly that connects the X reaction masses to the reaction frame, allows the X reaction masses to move independently relative to the reaction frame along the X axis and inhibits movement of the X reaction masses relative to the reaction frame along the Y axis.

29. (Original) The stage assembly of claim 28 further comprising a reaction guide assembly that allows the reaction frame to move relative to the stage base along the Y axis and inhibits movement of the reaction frame along the X axis.

30. (Original) The stage assembly of claim 28 further comprising a reaction mover assembly that adjusts the position of the X reaction masses relative to the reaction frame along the X axis.

31. (Original) The stage assembly of claim 30 wherein the reaction mover assembly adjusts the position of the reaction frame and the X reaction masses relative to the stage base along the Y axis.

32. (Original) The stage assembly of claim 28 wherein the reaction frame is adapted to move relative to the stage base along the X axis, along the Y axis and about the Z axis.

33. (Original) The stage assembly of claim 32 further comprising a reaction mover assembly that adjusts the position of the X reaction masses relative to the reaction frame along the X axis.

34. (Original) The stage assembly of claim 32 further comprising a reaction mover assembly that adjusts the position of the reaction frame and the X reaction masses relative to the stage base along the X axis, along the Y axis and about the Z axis.

35-36. (Canceled)

37-46. (Previously Canceled)

47. (Previously Amended) A stage assembly that is adapted to move a device relative to a stage base, the stage assembly comprising:

- a stage adapted to retain the device;

- a stage mover assembly connected to the stage, the stage mover assembly moving the stage along an X axis and along a Y axis and generating reaction forces along the X axis and along the Y axis;

- a reaction mass assembly coupled to the stage mover assembly, the reaction mass assembly being adapted to reduce the reaction forces along the X axis and along the Y axis, the reaction mass assembly including an X reaction component and a Y reaction component, the X reaction component moving relative to the stage base along the X axis, the X reaction component moving relative to the Y reaction component along the X axis and along the Y axis, and the X reaction component and the Y reaction component move concurrently along the Y axis; and

- a reaction mover assembly that adjusts (i) the position of the X reaction component relative to the Y reaction component along the X axis, (ii) the position of the Y reaction component and the X reaction component relative to the stage base along the Y axis, and (iii) the position of the Y reaction component and the X reaction component relative to the stage base along the X axis.

48-51 (Previously Canceled)

52. (Previously Amended) A stage assembly that is adapted to move a device relative to a stage base, the stage assembly comprising:

- a stage adapted to retain the device;

- a stage mover assembly connected to the stage, the stage mover

assembly moving the stage along an X axis and along a Y axis and generating reaction forces along the X axis and along the Y axis;

a reaction mass assembly coupled to the stage mover assembly, the reaction mass assembly being adapted to reduce the reaction forces along the X axis and along the Y axis, the reaction mass assembly including a X reaction component and a Y reaction component, the X reaction component including a first X reaction mass and a second X reaction mass that move independently along the X axis relative to the Y reaction component, the X reaction component moving relative to the stage base along the X axis and along the Y axis, the X reaction component and the Y reaction component moving concurrently along the Y axis, and the Y reaction component including a pair of spaced apart Y reaction masses; and

a mass guide assembly that connects the X reaction masses to the Y reaction masses, allows the X reaction masses to move independently relative to the Y reaction masses along the X axis and inhibits movement of the X reaction masses relative to the Y reaction masses along the Y axis.

53. (Original) The stage assembly of claim 52 further comprising a reaction guide assembly that allows the Y reaction masses to move relative to the stage base along the Y axis and inhibits movement of the Y reaction masses along the X axis.

54-56 (Previously Canceled)

57. (Previously Amended) The stage assembly of claim 97 further comprising a mass guide assembly that connects the X reaction masses to the reaction frame, allows the X reaction masses to move independently relative to the reaction frame along the X axis, and inhibits movement of the X reaction masses relative to the reaction frame along the Y axis.

58. (Original) The stage assembly of claim 57 further comprising a reaction

guide assembly that allows the reaction frame to move relative to the stage base along the Y axis and inhibits movement of the reaction frame along the X axis.

59. (Original) The stage assembly of claim 58 further comprising a reaction mover assembly that adjusts the position of the X reaction masses relative to the reaction frame along the X axis.

60. (Original) The stage assembly of claim 59 wherein the reaction mover assembly adjusts the position of the reaction frame and the X reaction masses relative to the stage base along the Y axis.

61. (Original) The stage assembly of claim 57 wherein the reaction frame is adapted to move relative to the stage base along the X axis, along the Y axis and about the Z axis.

62. (Original) The stage assembly of claim 61 further comprising a reaction mover assembly that adjusts the position of the X reaction masses relative to the reaction frame along the X axis.

63. (Original) The stage assembly of claim 61 further comprising a reaction mover assembly that adjusts the position of the reaction frame and the X reaction masses relative to the stage base along the X axis, along the Y axis and about the Z axis.

64-79 (Previously Canceled)

80. (Previously Amended) A method for making a stage assembly that moves a device relative to a stage base, the method comprising the steps of:

providing a stage that retains the device;

connecting a stage mover assembly to the stage, the stage mover

assembly moving the stage with at least two degrees of freedom and generating reaction forces in at least two degrees of freedom; and

coupling a reaction mass assembly to the stage mover assembly, the reaction mass assembly including a first X reaction mass, a second X reaction mass and a reaction frame, the first X reaction mass and the second X reaction mass moving independently along an X axis, the reaction mass assembly reducing the reaction forces in at least two degrees of freedom that are transferred to the stage base, the reaction frame being coupled to the X reaction masses so that the reaction frame moves relative to the stage base along the X axis.

81. (Original) The method of claim 80 including the step of providing a reaction mover assembly that adjusts the position of each X reaction mass relative to the reaction frame along the X axis, and adjusts the position of the reaction frame and the X reaction masses relative to the stage base along the Y axis.

82. (Original) The method of claim 80 including the step of providing a reaction mass assembly that adjusts the position of the X reaction masses and the reaction frame relative to the stage base along the X axis and along the Y axis.

83-89 (Previously Canceled)

90. (Previously Added) A stage assembly that is adapted to move a device relative to a stage base, the stage assembly comprising:

a stage adapted to retain the device;

a stage mover assembly connected to the stage, the stage mover assembly moving the stage with at least two degrees of freedom and generating reaction forces in at least two degrees of freedom;

a reaction mass assembly including an X reaction component and a Y reaction component that are coupled to the stage mover assembly, the X

reaction component moving relative to the Y reaction component along an X axis, the X reaction component and the Y reaction component moving concurrently along a Y axis relative to the stage base, the reaction mass assembly reducing the reaction forces in at least two degrees of freedom that are transferred to the stage base; and

a reaction mover assembly that adjusts the position of the X reaction component relative to the Y reaction component along the X axis, the reaction mover assembly adjusting the position of the X reaction component and the Y reaction component relative to the stage base along the X axis, the Y axis and about a Z axis.

91. (Previously Added) A stage assembly that is adapted to move a device relative to a stage base, the stage assembly comprising:

a stage adapted to retain the device;

a stage mover assembly connected to the stage, the stage mover assembly moving the stage with at least two degrees of freedom and generating reaction forces in at least two degrees of freedom; and

a reaction mass assembly including an X reaction component and a Y reaction component that are coupled to the stage mover assembly, the X reaction component moving relative to the Y reaction component along an X axis, the X reaction component and the Y reaction component moving concurrently along a Y axis relative to the stage base, the reaction mass assembly being adapted to reduce the reaction forces in at least two degrees of freedom that are transferred to the stage base; and

a reaction mover assembly that adjusts the position of the Y reaction component and the X reaction component relative to the stage base along the X axis, the Y axis and about a Z axis.

92. (Previously Added) A stage assembly that is adapted to move a device relative to a stage base, the stage assembly comprising:



a stage adapted to retain the device;

a stage mover assembly connected to the stage, the stage mover assembly moving the stage with at least two degrees of freedom and generating reaction forces in at least two degrees of freedom; and

a reaction mass assembly including an X reaction component and a Y reaction component that are coupled to the stage mover assembly, the X reaction component including a pair of spaced apart X reaction masses and the Y reaction component including a generally planar shaped reaction base, the X reaction component moving relative to the Y reaction component along an X axis, the X reaction component and the Y reaction component moving concurrently along a Y axis relative to the stage base, the reaction mass assembly being adapted to reduce the reaction forces in at least two degrees of freedom that are transferred to the stage base.

93. (Previously Added) A stage assembly that is adapted to move a device relative to a stage base, the stage assembly comprising:

a stage adapted to retain the device;

a stage mover assembly connected to the stage, the stage mover assembly moving the stage with at least two degrees of freedom and generating reaction forces in at least two degrees of freedom; and

a reaction mass assembly including an X reaction component and a Y reaction component that are coupled to the stage mover assembly, the X reaction component including a pair of spaced apart X reaction masses and the Y reaction component including a reaction frame, the X reaction component moving relative to the Y reaction component along an X axis, the X reaction component and the Y reaction component moving concurrently along a Y axis relative to the stage base, the reaction mass assembly being adapted to reduce the reaction forces in at least two degrees of freedom that are transferred to the stage base.

94. (Previously Added) A stage assembly that is adapted to move a device

relative to a stage base, the stage assembly comprising:

- a stage adapted to retain the device;

- a stage mover assembly connected to the stage, the stage mover assembly moving the stage along an X axis and along a Y axis and generating reaction forces along the X axis and along the Y axis; and

- a reaction mass assembly coupled to the stage mover assembly, the reaction mass assembly being adapted to reduce the reaction forces along the X axis and along the Y axis, the reaction mass assembly including a X reaction component that moves relative to the stage base along the X axis, along the Y axis and about a Z axis.

95. (Previously Added) A stage assembly that is adapted to move a device relative to a stage base, the stage assembly comprising:

- a stage adapted to retain the device;

- a stage mover assembly connected to the stage, the stage mover assembly moving the stage along an X axis and along a Y axis and generating reaction forces along the X axis and along the Y axis;

- a reaction mass assembly coupled to the stage mover assembly, the reaction mass assembly being adapted to reduce the reaction forces along the X axis and along the Y axis, the reaction mass assembly including an X reaction component and a Y reaction component, the X reaction component moving relative to the stage base along the X axis, the X reaction component moving relative to the Y reaction component along the X axis and along the Y axis, and the X reaction component and the Y reaction component move concurrently along the Y axis; and

- a reaction mover assembly that adjusts (i) the position of the X reaction component relative to the Y reaction component along the X axis, (ii) the position of the Y reaction component and the X reaction component relative to the stage base along the Y axis, (iii) the position of the Y reaction component and the X reaction component relative to the stage base along the X axis, and (iv) the position of the Y reaction component and the X reaction component relative to

the stage base about a Z axis.

96. (Previously Added) A stage assembly that is adapted to move a device relative to a stage base, the stage assembly comprising:

- a stage adapted to retain the device;

- a stage mover assembly connected to the stage, the stage mover assembly moving the stage along an X axis and along a Y axis and generating reaction forces along the X axis and along the Y axis; and

- a reaction mass assembly coupled to the stage mover assembly, the reaction mass assembly being adapted to reduce the reaction forces along the X axis and along the Y axis, the reaction mass assembly including an X reaction component and a Y reaction component, the X reaction component including a first X reaction mass and a second X reaction mass that move independently along the X axis relative to the Y reaction component, the X reaction component moving relative to the stage base along the X axis, the X reaction component moving relative to the Y reaction component along the Y axis, the X reaction component and the Y reaction component moving concurrently along the Y axis, and the Y reaction component including a generally planar shaped reaction base.

97. (Previously Added) A stage assembly that is adapted to move a device relative to a stage base, the stage assembly comprising:

- a stage adapted to retain the device;

- a stage mover assembly connected to the stage, the stage mover assembly moving the stage along an X axis and along a Y axis and generating reaction forces along the X axis and along the Y axis; and

- a reaction mass assembly coupled to the stage mover assembly, the reaction mass assembly being adapted to reduce the reaction forces along the X axis and along the Y axis, the reaction mass assembly including an X reaction component and a Y reaction component, the X reaction component including a first X reaction mass and a second X reaction mass that move independently along the X axis relative to the Y reaction component, the X reaction component

moving relative to the stage base along the X axis, the X reaction component moving relative to the Y reaction component along the Y axis, the X reaction component and the Y reaction component moving concurrently along the Y axis, the Y reaction component including a reaction frame.

98. (Previously Added) A method for making a stage assembly that moves a device relative to a stage base, the method comprising the steps of:

providing a stage that retains the device;

connecting a stage mover assembly to the stage, the stage mover assembly moving the stage with at least two degrees of freedom and generating reaction forces in at least two degrees of freedom;

coupling a reaction mass assembly to the stage mover assembly, the reaction mass assembly including an X reaction component and a Y reaction component, the X reaction component moving relative to the Y reaction component along an X axis, the X reaction component and the Y reaction component move concurrently along a Y axis, the reaction mass assembly reducing the reaction forces in at least two degrees of freedom that are transferred to the stage base; and

adjusting the position of the Y reaction component and the X reaction component relative to the stage base along an X axis and about a Z axis with a reaction mover assembly.

99. (Previously Added) A stage assembly that moves a device relative to a stage base, the stage assembly comprising:

a stage that retains the device;

a stage mover assembly connected to the stage, the stage mover assembly moving the stage with at least two degrees of freedom and generating a reaction force along a Y axis; and

a reaction mass assembly coupled to the stage mover assembly, the reaction mass assembly including an X reaction component and a Y reaction

component, the X reaction component moving relative to the Y reaction component, the reaction components moving along the Y axis to reduce the reaction force along the Y axis that is transferred to the stage base.

100. (Previously Added) The stage assembly of claim 99 wherein the stage mover assembly moves the stage along the Y axis directly causing the X reaction component and the Y reaction component to move along the Y axis.

101. (Previously Added) The stage assembly of claim 99 wherein the X reaction component moves relative to the stage base with three degrees of freedom.

102. (Previously Added) The stage assembly of claim 101 wherein the Y reaction component moves relative to the stage base with three degrees of freedom.

103. (Previously Added) The stage assembly of claim 99 wherein the stage mover assembly comprises an X stage mover that moves the stage along the X axis, the X stage mover being coupled to the X reaction component so that movement of the stage by the X stage mover results in movement of the X reaction component along the X axis.

104. (Previously Added) The stage assembly of claim 103 wherein the stage mover assembly comprises a Y stage mover that moves the stage along the Y axis, the Y stage mover being coupled to the X reaction component so that movement of the stage by the Y stage mover results in movement of the X reaction component along the Y axis.

105. (Previously Added) The stage assembly of claim 99 further comprising a reaction mover assembly that adjusts the position of at least a portion of the reaction mass assembly relative to the stage base with one degree of freedom.

106. (Previously Added) The stage assembly of claim 99 further comprising a

reaction mover assembly that adjusts the position of at least a portion of the reaction mass assembly relative to the stage base with two degrees of freedom.

107. (Previously Added) The stage assembly of claim 99 further comprising a reaction mover assembly that adjusts the position of at least a portion of the reaction mass assembly relative to the stage base with three degrees of freedom.

108. (Previously Added) The stage assembly of claim 99 further comprising a reaction mover assembly that adjusts the position of the Y reaction component and the X reaction component relative to the stage base along the Y axis.

109. (Previously Added) The stage assembly of claim 99 further comprising a reaction mover assembly that adjusts the position of one of the reaction components relative to the stage base about a Z axis.

110. (Previously Added) The stage assembly of claim 99 further comprising a reaction mover assembly that adjusts the position of the X reaction component and the Y reaction component relative to the stage base about a Z axis.

111. (Previously Added) The stage assembly of claim 99 wherein the X reaction component includes a first X reaction mass and a second X reaction mass that move independently along the X axis relative to the Y reaction component.

112. (Previously Added) The stage assembly of claim 99 further comprising a mass guide assembly that allows the X reaction component to move relative to the Y reaction component along the X axis and inhibits movement of the X reaction component relative to the Y reaction component along the Y axis.

113. (Previously Added) The stage assembly of claim 99 wherein the X reaction component includes a pair of spaced apart X reaction masses and the Y reaction component includes a generally planar shaped reaction base.

114. (Previously Added) The stage assembly of claim 99 wherein the X reaction component includes a pair of spaced apart X reaction masses and the Y reaction component includes a pair of spaced apart Y reaction masses.

115. (Previously Added) The stage assembly of claim 114 further comprising a mass guide assembly that connects the X reaction masses to the Y reaction masses, allows the X reaction masses to move independently relative to the Y reaction masses along the X axis and inhibits movement of the X reaction masses relative to the Y reaction masses along the Y axis.

116. (Previously Added) The stage assembly of claim 114 further comprising a reaction guide assembly that allows the Y reaction masses to move relative to the stage base along the Y axis and inhibits movement of the Y reaction masses along the X axis.

117. (Previously Added) The stage assembly of claim 114 further comprising a reaction mover assembly that adjusts the position of the X reaction masses relative to the Y reaction masses along the X axis.

118. (Previously Added) The stage assembly of claim 117 wherein the reaction mover assembly adjusts the position of the Y reaction masses and the X reaction masses relative to the stage base along the Y axis.

119. (Previously Added) The stage assembly of claim 99 wherein the X reaction component includes a pair of spaced apart X reaction masses and the Y reaction component includes a reaction frame.

120. (Previously Added) The stage assembly of claim 119 further comprising a mass guide assembly that connects the X reaction masses to the reaction frame, allows the X reaction masses to move independently relative to the reaction frame along the X axis and inhibits movement of the X reaction masses relative to the reaction frame

along the Y axis.

121. (Previously Added) The stage assembly of claim 120 further comprising a reaction guide assembly that allows the reaction frame to move relative to the stage base along the Y axis and inhibits movement of the reaction frame along the X axis.

122. (Previously Added) The stage assembly of claim 120 further comprising a reaction mover assembly that adjusts the position of the X reaction masses relative to the reaction frame along the X axis.

123. (Previously Added) The stage assembly of claim 122 wherein the reaction mover assembly adjusts the position of the reaction frame and the X reaction masses relative to the stage base along the Y axis.

124. (Previously Added) The stage assembly of claim 120 wherein the reaction frame moves relative to the stage base about the Z axis.

125. (Previously Added) The stage assembly of claim 120 further comprising a reaction mover assembly that adjusts the position of the reaction frame and the X reaction masses relative to the stage base about the Z axis.

126. (Previously Added) The stage assembly of claim 99 wherein the reaction components move along the Y axis to reduce the reaction force along the Y axis that is transferred to the stage base.

127. (Previously Added) The stage assembly of claim 99 wherein the reaction components move concurrently along the Y axis to reduce the reaction force along the Y axis that is transferred to the stage base.

128. (Previously Added) An exposure apparatus including the stage assembly of claim 99.



129. (Currently Amended) A process for manufacturing a device including the step of manufactured with utilizing the exposure apparatus according to claim 128.

130. (Currently Amended) A process for making a wafer on which an image has been formed by including the step of utilizing the exposure apparatus according to of claim 128.

131. (Previously Added) A stage assembly that moves a device relative to a stage base, the stage assembly comprising:

- a stage that retains the device;

- a stage mover assembly connected to the stage, the stage mover assembly moving the stage with at least two degrees of freedom and generating reaction forces;

- a reaction mass assembly coupled to the stage mover assembly, the reaction mass assembly reducing the reaction forces in at least one degree of freedom that is transferred to the stage base, the reaction mass assembly including a Y reaction component and an X reaction component that moves relative to the Y reaction component, one of the reaction components moving about a Z axis relative to the stage base.

132. (Previously Added) The stage assembly of claim 131 further comprising a reaction mover assembly that adjusts the position of one of the reaction components relative to the stage base about a Z axis.

133. (Previously Added) The stage assembly of claim 131 wherein the X reaction component moves relative to the stage base with three degrees of freedom.

134. (Previously Added) The stage assembly of claim 133 wherein the Y reaction component moves relative to the stage base with three degrees of freedom.

135. (Previously Added) The stage assembly of claim 131 wherein the stage mover assembly comprises an X stage mover that moves the stage along an X axis, the X stage mover being coupled to the X reaction component so that movement of the stage by the X stage mover results in movement of the X reaction component along the X axis.

136. (Previously Added) The stage assembly of claim 135 wherein the stage mover assembly comprises a Y stage mover that moves the stage along a Y axis, the Y stage mover being coupled to the X reaction component so that movement of the stage by the Y stage mover results in movement of the X reaction component along the Y axis.

137. (Previously Added) The stage assembly of claim 131 further comprising a reaction mover assembly that adjusts the position of one of the reaction components relative to the stage base with two degrees of freedom.

138. (Previously Added) The stage assembly of claim 131 further comprising a reaction mover assembly that adjusts the position of one of the reaction components relative to the stage base with three degrees of freedom.

139. (Previously Added) The stage assembly of claim 131 further comprising a reaction mover assembly that adjusts the position of each of the reaction components relative to the stage base with three degrees of freedom.

140. (Previously Added) The stage assembly of claim 131 further comprising a reaction mover assembly that adjusts the position of each of the reaction components relative to the stage base about the Z axis.

141. (Previously Added) The stage assembly of claim 131 wherein the X reaction component includes a first X reaction mass and a second X reaction mass that move independently along an X axis relative to the Y reaction component.

142. (Previously Added) The stage assembly of claim 131 further comprising a mass guide assembly that allows the X reaction component to move relative to the Y reaction component along an X axis and inhibits movement of the X reaction component relative to the Y reaction component along a Y axis.

143. (Previously Added) The stage assembly of claim 131 wherein the X reaction component includes a pair of spaced apart X reaction masses and the Y reaction component includes a generally planar shaped reaction base.

144. (Previously Added) The stage assembly of claim 131 wherein the X reaction component includes a pair of spaced apart X reaction masses and the Y reaction component includes a pair of spaced apart Y reaction masses.

145. (Previously Added) The stage assembly of claim 144 further comprising a mass guide assembly that connects the X reaction masses to the Y reaction masses, allows the X reaction masses to move independently relative to the Y reaction masses along an X axis and inhibits movement of the X reaction masses relative to the Y reaction masses along a Y axis.

146. (Previously Added) The stage assembly of claim 144 further comprising a reaction guide assembly that allows the Y reaction masses to move relative to the stage base along a Y axis and inhibits movement of the Y reaction masses along an X axis.

147. (Previously Added) The stage assembly of claim 144 further comprising a reaction mover assembly that adjusts the position of the X reaction masses relative to the Y reaction masses along an X axis.

148. (Previously Added) The stage assembly of claim 147 wherein the reaction mover assembly adjusts the position of the Y reaction masses and the X reaction masses relative to the stage base along a Y axis.

149. (Previously Added) The stage assembly of claim 131 wherein the X reaction component includes a pair of spaced apart X reaction masses and the Y reaction component includes a reaction frame.

150. (Previously Added) The stage assembly of claim 149 further comprising a mass guide assembly that connects the X reaction masses to the reaction frame, allows the X reaction masses to move independently relative to the reaction frame along an X axis and inhibits movement of the X reaction masses relative to the reaction frame along a Y axis.

151. (Previously Added) The stage assembly of claim 150 further comprising a reaction guide assembly that allows the reaction frame to move relative to the stage base along the Y axis and inhibits movement of the reaction frame along the X axis.

152. (Previously Added) The stage assembly of claim 150 further comprising a reaction mover assembly that adjusts the position of the X reaction masses relative to the reaction frame along the X axis.

153. (Previously Added) The stage assembly of claim 152 further comprising a reaction mover assembly that adjusts the position of the reaction frame and the X reaction masses relative to the stage base along the Y axis.

154. (Previously Added) The stage assembly of claim 150 wherein the reaction frame moves relative to the stage base about the Z axis.

155. (Previously Added) The stage assembly of claim 150 further comprising a reaction mover assembly that adjusts the position of the reaction frame and the X reaction masses relative to the stage base about the Z axis.

156. (Previously Added) The stage assembly of claim 131 wherein the X

reaction component moves relative to the Y reaction component along an X axis, and the reaction components move concurrently in the same direction along a Y axis.

157. (Previously Added) The stage assembly of claim 131 wherein the Y reaction component supports at least a portion of the X reaction component.

158. (Previously Added) The stage assembly of claim 131 wherein the reaction components move along a Y axis to reduce the reaction force along the Y axis that is transferred to the stage base.

159. (Previously Added) The stage assembly of claim 131 wherein the reaction components move concurrently along a Y axis to reduce the reaction force along the Y axis that is transferred to the stage base.

160. (Previously Added) An exposure apparatus including the stage assembly of claim 131.

161. (Currently Amended) A process for manufacturing a device including the step of manufactured with utilizing the exposure apparatus according to claim 160.

162. (Currently Amended) A process for making a wafer on which an image has been formed by including the step of utilizing the exposure apparatus according to of claim 160.

163. (Previously Added) A stage assembly that moves a device relative to a stage base, the stage assembly comprising:

a stage that retains the device;

a stage mover assembly connected to the stage, the stage mover assembly moving the stage with at least two degrees of freedom and generating reaction forces in at least two degrees of freedom; and

a reaction mass assembly including an X reaction component and a Y

reaction component that are coupled to the stage mover assembly, the X reaction component moving relative to the Y reaction component, the Y reaction component including a generally planar shaped reaction base, the reaction mass assembly reducing the reaction forces in at least two degrees of freedom that are transferred to the stage base.

164. (Previously Added) The stage assembly of claim 163 wherein the stage mover assembly moves the stage along a Y axis directly causing the X reaction component and the Y reaction component to move along the Y axis.

165. (Previously Added) The stage assembly of claim 163 wherein one of the reaction components moves relative to the stage base with three degrees of freedom.

166. (Previously Added) The stage assembly of claim 163 wherein each of the reaction components moves relative to the stage base with three degrees of freedom.

167. (Previously Added) The stage assembly of claim 163 wherein the stage mover assembly comprises an X stage mover that moves the stage along an X axis, the X stage mover being coupled to the X reaction component so that movement of the stage by the X stage mover results in movement of the X reaction component along the X axis.

168. (Previously Added) The stage assembly of claim 167 wherein the stage mover assembly comprises a Y stage mover that moves the stage along a Y axis, the Y stage mover being coupled to the X reaction component so that movement of the stage by the Y stage mover results in movement of the X reaction component along the Y axis.

169. (Previously Added) The stage assembly of claim 163 further comprising a reaction mover assembly that adjusts the position of at least a portion of the reaction mass assembly relative to the stage base with one degree of freedom.

170. (Previously Added) The stage assembly of claim 163 further comprising a reaction mover assembly that adjusts the position of at least a portion of the reaction mass assembly relative to the stage base with two degrees of freedom.

171. (Previously Added) The stage assembly of claim 163 further comprising a reaction mover assembly that adjusts the position of at least a portion of the reaction mass assembly relative to the stage base with three degrees of freedom.

172. (Previously Added) The stage assembly of claim 163 further comprising a reaction mover assembly that adjusts the position of the Y reaction component and the X reaction component relative to the stage base along the Y axis.

173. (Previously Added) The stage assembly of claim 163 further comprising a reaction mover assembly that adjusts the position of one of the reaction components relative to the stage base about a Z axis.

174. (Previously Added) The stage assembly of claim 163 further comprising a reaction mover assembly that adjusts the position of the X reaction component and the Y reaction component relative to the stage base about a Z axis.

175. (Previously Added) The stage assembly of claim 163 wherein the X reaction component includes a first X reaction mass and a second X reaction mass that move independently along the X axis relative to the Y reaction component.

176. (Previously Added) The stage assembly of claim 163 further comprising a mass guide assembly that allows the X reaction component to move relative to the Y reaction component along the X axis and inhibits movement of the X reaction component relative to the Y reaction component along the Y axis.

177. (Previously Added) The stage assembly of claim 163 wherein the X

reaction component includes a pair of spaced apart X reaction masses.

178. (Previously Added) The stage assembly of claim 163 wherein the Y reaction component supports at least a portion of the X reaction component.

179. (Previously Added) The stage assembly of claim 163 wherein the X reaction component moves relative to the Y reaction component along an X axis, and the reaction components moves concurrently in the same direction along a Y axis.

180. (Previously Added) The stage assembly of claim 179 further comprising a reaction mover assembly that adjusts the position of one of the reaction components relative to the stage base about a Z axis.

181. (Previously Added) The stage assembly of claim 163 wherein the reaction components move along a Y axis to reduce the reaction force along the Y axis that is transferred to the stage base.

182. (Previously Added) The stage assembly of claim 163 wherein the reaction components move concurrently along a Y axis to reduce the reaction force along the Y axis that is transferred to the stage base.

183. (Previously Added) An exposure apparatus including the stage assembly of claim 163.

184. (Currently Amended) A process for manufacturing a device including the step of manufactured with utilizing the exposure apparatus according to claim 183.

185. (Currently Amended) A process for making a wafer on which an image has been formed by including the step of utilizing the exposure apparatus according to of claim 183.



186. (Previously Added) A stage assembly that moves a device relative to a stage base, the stage assembly comprising:

a stage that retains the device;

a stage mover assembly connected to the stage, the stage mover assembly moving the stage with at least two degrees of freedom and generating reaction forces in at least two degrees of freedom; and

a reaction mass assembly including an X reaction component and a Y reaction component that are coupled to the stage mover assembly, the Y reaction component including a reaction frame, the X reaction component moving relative to the Y reaction component, the reaction mass assembly reducing the reaction forces in at least two degrees of freedom that are transferred to the stage base.

187. (Previously Added) The stage assembly of claim 186 wherein the stage mover assembly moves the stage along a Y axis directly causing the X reaction component and the Y reaction component to move along the Y axis.

188. (Previously Added) The stage assembly of claim 186 wherein one of the reaction components moves relative to the stage base with three degrees of freedom.

189. (Previously Added) The stage assembly of claim 186 wherein each of the reaction components moves relative to the stage base with three degrees of freedom.

190. (Previously Added) The stage assembly of claim 186 wherein the stage mover assembly comprises an X stage mover that moves the stage along an X axis, the X stage mover being coupled to the X reaction component so that movement of the stage by the X stage mover results in movement of the X reaction component along the X axis.

191. (Previously Added) The stage assembly of claim 190 wherein the stage mover assembly comprises a Y stage mover that moves the stage along a Y axis, the Y

stage mover being coupled to the X reaction component so that movement of the stage by the Y stage mover results in movement of the X reaction component along the Y axis.

192. (Previously Added) The stage assembly of claim 186 further comprising a reaction mover assembly that adjusts the position of at least a portion of the reaction mass assembly relative to the stage base with two degrees of freedom.

193. (Previously Added) The stage assembly of claim 186 further comprising a reaction mover assembly that adjusts the position of at least a portion of the reaction mass assembly relative to the stage base with three degrees of freedom.

194. (Previously Added) The stage assembly of claim 186 further comprising a reaction mover assembly that adjusts the position of the Y reaction component and the X reaction component relative to the stage base along the Y axis.

195. (Previously Added) The stage assembly of claim 186 further comprising a reaction mover assembly that adjusts the position of one of the reaction components relative to the stage base about a Z axis.

196. (Previously Added) The stage assembly of claim 186 further comprising a reaction mover assembly that adjusts the position of the X reaction component and the Y reaction component relative to the stage base about a Z axis.

197. (Previously Added) The stage assembly of claim 186 further comprising a mass guide assembly that allows the X reaction component to move relative to the Y reaction component along the X axis and inhibits movement of the X reaction component relative to the Y reaction component along the Y axis.

198. (Previously Added) The stage assembly of claim 186 wherein the Y reaction component supports at least a portion of the X reaction component.

199. (Previously Added) The stage assembly of claim 186 wherein the X reaction component moves relative to the Y reaction component along an X axis, and the reaction components moving concurrently in the same direction along a Y axis.

200. (Previously Added) The stage assembly of claim 186 wherein the X reaction component includes a pair of spaced apart X reaction masses.

201. (Previously Added) The stage assembly of claim 186 wherein the reaction components move along a Y axis to reduce the reaction force along the Y axis that is transferred to the stage base.

202. (Previously Added) The stage assembly of claim 186 wherein the reaction components move concurrently along a Y axis to reduce the reaction force along the Y axis that is transferred to the stage base.

203. (Previously Added) An exposure apparatus including the stage assembly of claim 186.

204. (Currently Amended) A process for manufacturing a device including the step of manufactured with utilizing the exposure apparatus according to claim 203.

205. (Currently Amended) A process for making a wafer on which an image has been formed by including the step of utilizing the exposure apparatus according to of claim 203.

206. (Previously Added) A stage assembly that moves a device relative to a stage base, the stage assembly comprising:

a stage that retains the device;

a stage mover assembly connected to the stage, the stage mover assembly moving the stage with at least two degrees of freedom and generating

reaction forces in at least two degrees of freedom; and

a reaction mass assembly including an X reaction component and a Y reaction component that are coupled to the stage mover assembly, the X reaction component moving relative to the Y reaction component, the Y reaction component supporting at least a portion of the X reaction component, the reaction mass assembly reducing the reaction forces in at least two degrees of freedom that are transferred to the stage base.

207. (Previously Added) The stage assembly of claim 206 wherein the stage mover assembly moves the stage along a Y axis directly causing the X reaction component and the Y reaction component to move along the Y axis.

208. (Previously Added) The stage assembly of claim 206 wherein the X reaction component moves relative to the stage base with three degrees of freedom.

209. (Previously Added) The stage assembly of claim 208 wherein the Y reaction component moves relative to the stage base with three degrees of freedom.

210. (Previously Added) The stage assembly of claim 206 wherein the stage mover assembly comprises an X stage mover that moves the stage along the X axis, the X stage mover being coupled to the X reaction component so that movement of the stage by the X stage mover results in movement of the X reaction component along the X axis.

211. (Previously Added) The stage assembly of claim 210 wherein the stage mover assembly comprises a Y stage mover that moves the stage along the Y axis, the Y stage mover being coupled to the X reaction component so that movement of the stage by the Y stage mover results in movement of the X reaction component along the Y axis.

212. (Previously Added) The stage assembly of claim 206 further comprising a

reaction mover assembly that adjusts the position of at least a portion of the reaction mass assembly relative to the stage base with two degrees of freedom.

213. (Previously Added) The stage assembly of claim 206 further comprising a reaction mover assembly that adjusts the position of at least a portion of the reaction mass assembly relative to the stage base with three degrees of freedom.

214. (Previously Added) The stage assembly of claim 206 further comprising a reaction mover assembly that adjusts the position of the Y reaction component and the X reaction component relative to the stage base along the Y axis.

215. (Previously Added) The stage assembly of claim 206 further comprising a reaction mover assembly that adjusts the position of one of the reaction components relative to the stage base about a Z axis.

216. (Previously Added) The stage assembly of claim 206 further comprising a reaction mover assembly that adjusts the position of the X reaction component and the Y reaction component relative to the stage base about a Z axis.

217. (Previously Added) The stage assembly of claim 206 wherein the X reaction component includes a first X reaction mass and a second X reaction mass that move independently along the X axis relative to the Y reaction component.

218. (Previously Added) The stage assembly of claim 206 further comprising a mass guide assembly that allows the X reaction component to move relative to the Y reaction component along the X axis and inhibits movement of the X reaction component relative to the Y reaction component along the Y axis.

219. (Previously Added) The stage assembly of claim 206 wherein the X reaction component includes a pair of spaced apart X reaction masses and the Y reaction component includes a generally planar shaped reaction base.

220. (Previously Added) The stage assembly of claim 206 wherein the X reaction component includes a pair of spaced apart X reaction masses and the Y reaction component includes a pair of spaced apart Y reaction masses.

221. (Previously Added) The stage assembly of claim 220 further comprising a mass guide assembly that connects the X reaction masses to the Y reaction masses, allows the X reaction masses to move independently relative to the Y reaction masses along the X axis and inhibits movement of the X reaction masses relative to the Y reaction masses along the Y axis.

222. (Previously Added) The stage assembly of claim 220 further comprising a reaction guide assembly that allows the Y reaction masses to move relative to the stage base along the Y axis and inhibits movement of the Y reaction masses along the X axis.

223. (Previously Added) The stage assembly of claim 220 further comprising a reaction mover assembly that adjusts the position of the X reaction masses relative to the Y reaction masses along the X axis.

224. (Previously Added) The stage assembly of claim 223 wherein the reaction mover assembly adjusts the position of the Y reaction masses and the X reaction masses relative to the stage base along the Y axis.

225. (Previously Added) The stage assembly of claim 206 wherein the X reaction component includes a pair of spaced apart X reaction masses and the Y reaction component includes a reaction frame.

226. (Previously Added) The stage assembly of claim 206 wherein the reaction components move along a Y axis to reduce the reaction force along the Y axis that is transferred to the stage base.

227. (Previously Added) The stage assembly of claim 206 wherein the reaction components move concurrently along a Y axis to reduce the reaction force along the Y axis that is transferred to the stage base.

228. (Previously Added) An exposure apparatus including the stage assembly of claim 206.

229. (Currently Amended) A process for manufacturing a device including the step of manufactured with utilizing the exposure apparatus according to claim 228.

230. (Currently Amended) A process for making a wafer on which an image has been formed by including the step of utilizing the exposure apparatus according to of claim 228.

231. (Previously Added) A method for making a stage assembly that moves a device relative to a stage base, the method comprising the steps of:

retaining the device with a stage;

generating reaction forces by moving the stage with two degrees of freedom with a stage mover assembly;

coupling a reaction mass assembly to the stage mover assembly, the reaction mass assembly including a Y reaction component and an X reaction component that moves relative to the Y reaction component, the reaction mass assembly reducing the reaction forces that are transferred to the stage base; and

adjusting the position of at least one of the reaction components relative to the stage base about a Z axis with a reaction mover assembly.

232. (Previously Added) The method of claim 231 wherein the step of generating reaction forces includes the step of providing an X stage mover that moves the stage along an X axis, the X stage mover being coupled to the X reaction component so that movement of stage by the X stage mover results in movement of the

X reaction component along the X axis.

233. (Previously Added) The method of claim 232 wherein the step of generating reaction forces includes the step of providing a Y stage mover that moves the stage along a Y axis, the Y stage mover being coupled to the X reaction component so that movement of the stage by the Y stage mover results in movement of the X reaction component along the Y axis.

234. (Previously Added) The method of claim 231 wherein the step of coupling the reaction mass assembly includes the step of moving the X reaction component and the Y reaction component concurrently in a same direction along a Y axis.

235. (Previously Added) The method of claim 231 wherein the step of adjusting the position includes adjusting the position of the X reaction component relative to the Y reaction component along an X axis.

236. (Previously Added) The method of claim 231 wherein the step of adjusting the position includes adjusting the position of the Y reaction component and the X reaction component concurrently relative to the stage base along a Y axis.

237. (Previously Added) The method of claim 231 wherein the step of adjusting the position includes adjusting the position of the Y reaction component and the X reaction component relative to the stage base along an X axis and about the Z axis.

238. (Previously Added) The method of claim 231 wherein the step of adjusting the position includes adjusting the position of the X reaction component relative to the Y reaction component along an X axis, and adjusting the position of the Y reaction component and the X reaction component relative to the stage base along a Y axis.



239. (Previously Added) The method of claim 231 wherein the step of coupling a reaction mass assembly includes the step of providing a first X reaction mass and a second X reaction mass that move independently along an X axis.

240. (Previously Added) The method of claim 239 wherein the step of coupling a reaction mass assembly includes the step of coupling a reaction frame to the X reaction masses so that the reaction frame moves relative to the stage base along the X axis.

241. (Previously Added) The method of claim 240 wherein the step of adjusting the position includes adjusting the position of each X reaction mass relative to the reaction frame along the X axis, and adjusting the position of the reaction frame and the X reaction masses relative to the stage base along the Y axis.

242. (Previously Added) The method of claim 240 including the step of adjusting the position of the X reaction masses and the reaction frame relative to the stage base along the X axis and along the Y axis with the reaction mover assembly.

243. (Previously Added) The method of claim 231 wherein the step of adjusting the position includes adjusting the position of the reaction mass assembly relative to the stage base along the X axis.

244. (Previously Added) The method of claim 231 wherein the step of adjusting the position includes adjusting the position of the reaction mass assembly relative to the stage base along the X axis and along the Y axis.

245. (Previously Added) A method for making an exposure apparatus that forms an image on a wafer, the method comprising the steps of:

providing an irradiation apparatus that irradiates the wafer with radiation to form the image on the wafer; and

providing the stage assembly made by the method of claim 231.

246. (Previously Added) A method of making a wafer utilizing the exposure apparatus made by the method of claim 245.

247. (Previously Added) A method of making a device including at least the exposure process: wherein the exposure process utilizes the exposure apparatus made by the method of claim 245.